from the screen. The holographic screen **910** can converge the light into a narrow beam slice representing a single view of the virtual world. Illuminating the screen from ~1° to the side produces the adjacent viewing position slice. If the display information is synchronized with the rendering of the corresponding view, a true 3-D effect results.

The geometry shown makes use of three separate projection systems, each covering a 60° field of view, creating a total 180° viewing field. Additional projection systems can be added to increase this to a full 360° virtual reality immersion capability. Each projection system consists of a high frame rate 3-D video/graphic projector. For example, ferroelectric LCDs are available that are capable of 10,000 frames per second at a full resolution of 1024×756 pixels. The high frame rate is useful, since all viewing slices can be scanned within approximately 30 ms to produce flicker-free visualization. The parallel rendering system can be synchronized with the current viewing location (slice location), and can render a view of the virtual world for the particular slice. Since the model of the virtual world is defined, several simultaneous renderings can be incorporated for smooth transition among adjacent viewing slices.

The system **900** according to one embodiment has 180° visualization capability based on three projectors, each covering a solid angle of 60°×45° (3×4 aspect ratio). It can include full-color 3-D display capability and with greater than 1280×1024 pixel resolution per single channel with a frame rate in excess of 60 fps. Typical performance characteristics of the system are summarized in Table 1.

TABLE 1

Number of projectors	Three 3-D projectors
Frame rate	60 Hz
Resolution	1280 × 1024 per 3-D channel (3584 × 1024 for a total of 180° with two 64 pixel overlaps
Head movement	Flexible within cylinder of 40 in. radius
Screen size	6 ft. × 5 ft. single panel (18 ft. × 5 ft. total)
Number of channels	Three 3-D channels
Brightness on the screen	300–400 lumens
Rendering system	Adapt existing network of three SGI workstations or 1 GHz PC

While this invention has been described with specific embodiments thereof, it is evident that many alternatives, modifications, and variations will be apparent to those skilled in the art. Accordingly, the preferred embodiments of the invention as set forth herein are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A dynamic time multiplexed holographic system comprising:

a holographic screen; and

a unitary projector that projects successive perspective images onto the holographic screen;

the holographic screen configured for refracting the successive perspective images perpendicular to the holographic screen.

2. The dynamic time multiplexed holographic system according to claim **1**, wherein the projector further comprises a rotating polygon that provides successive image slices to the holographic screen.

3. The dynamic time multiplexed holographic system according to claim **2**, wherein the projector further comprises a spatial light modulator that provides successive image slices to the rotating polygon.

4. A dynamic time multiplexed holographic system for producing an image having a volume of visual information comprising:

a holographic screen configured to produce the image having a volume of visual information; and

a unitary projector configured to project different channels including slightly different views of the image via the holographic screen to generate the volume of visual information;

the holographic screen also being configured for diffracting said image views perpendicular to the screen regardless of the angle of incidence onto said screen.

5. The dynamic time multiplexed holographic system according to claim **4**, wherein the views are updated approximately every 30 ms.

6. The dynamic time multiplexed holographic system according to claim **4**, wherein the projector comprises:

a light source;

a rotating polygon coupled to the light source, the rotating polygon configured to spatially multiplex viewing slices onto the holographic screen.

7. The dynamic time multiplexed holographic system according to claim **6**, wherein the projector comprises:

a spatial light modulator coupled between the light source and the rotating polygon; and

a rendering engine coupled to the spatial light modulator, the rendering engine configured to drive the spatial light modulator.

8. The dynamic time multiplexed holographic system according to claim **6**, wherein the holographic screen is configured to converge light from the rotating polygon into narrow beam slices each representing a single view of the image.

9. The dynamic time multiplexed holographic system according to claim **4**, further comprising:

at least one additional holographic screen configured to produce additional views of the image having a volume of visual information; and

at least one additional projector configured to project additional different channels including slightly different views of the image via the at least one additional holographic screen to generate the volume of visual information.

10. The dynamic time multiplexed holographic system according to claim **9**, wherein the at least one additional holographic screen and the at least one additional projector are configured to increase the field of view of a image having a volume of visual information.

11. The dynamic time multiplexed holographic system according to claim **9**, wherein the at least one additional holographic screen and the at least one additional projector are configured to increase the field of view to a 360° view of the image having a volume of visual information for virtual reality immersion capability.

12. The dynamic time multiplexed holographic system according to claim **4**, wherein the holographic screen is substantially horizontal and the projector is located below the holographic screen to generate an image above the holographic screen.

13. The dynamic time multiplexed holographic system according to claim **4**, wherein the holographic screen is substantially vertical and the projector is located behind the holographic screen to generate an image in front of the holographic screen.

14. The dynamic time multiplexed holographic system according to claim **4**, wherein the image is a three-dimensional full color image having a volume of visual information.

15. A method of providing an image having visual image information comprising: